INTERNATIONAL SEARCH REPORT

ii Application No
PCT/US2005/002797

A. CLASSIFICATION OFjSUB JECT MATTER

C12Q1/68

According lo International Patent Classification (IPC) or to both national classification and IPC

B FIELDS SEARCHED

Minimum documentation searched (classification system fo!lowed by classification symbols)

C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and where practical search terms used)

EPO-Internal , BIOSIS, EMBASE, EMBL, Sequence Search

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	RICHARDS MARK ET AL: "The transcriptome profile of human embryonic stem cells as defined by SAGE." STEM CELLS (DAYTON, OHIO) 2004, vol. 22, no. 1, January 2004 (2004-01), pages 51-64, XP002350243 ISSN: 1066-5099 abstract page 53; figure 3, tables 3,6 ----- -/--	1,3,5-8, 10, 12-18, 21-27, 32-35, 41-45

[X] Further documents are listed In the continuation of box C

[X] Patent family members are listed in annex

° Special categories of cited documents

'A' document defining the general state of the art which is not considered to be of particular relevance

'E' earlier document but published on or after the international filing date

'L' document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

'O' document referring to an oral disclosure, use, exhibition or other means

'P' document published prior to the international filing date but later than the priority date claimed

'T' later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

'X' document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

'Y' document of particular relevance, the claimed invention cannot be considered to involve an Inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

'&' document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
31 October 2005	28. 02. 2005

Name and mailing address of the ISA	Authorized officer
European Patent Office, P B 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel (+31-70) 340-2040, Tx 31 651 epo nl, Fax (+31-70) 340-3016	Costa Roldan, N

Fom PCT/SA/210 (second sheet) (January 2004)

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IAP11 Rec'd PCT/PTO 04 AUG 2006

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	SPERGER JAMIE M ET AL: "Gene expressi on patterns i n human embryonic stem cel l s and human pi uri potent germ cel l tumors ." PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA. 11 NOV 2003, vol . 100, no. 23, 11 November 2003 (2003-11-11), pages 13350-13355 , XP002350244 ISSN: 0027-8424 abstract ; tables 1,2	1,3,5-8, 10, 12-18, 21-27, 32-35, 41-45
X	TANAKA TETSUYA S ET AL: "Gene expression profi l ing of embryo-deri ved stem cel l s reveal s candidate genes associated with pi uri potency and l ineage specificity. " GENOME RESEARCH. DEC 2002, vol . 12, no. 12, December 2002 (2002-12) , pages 1921-1928, XP002350245 ISSN: 1088-9051 abstract	1,3,5-8, 10, 12-18, 21-27, 32-35, 41-45
X	CARPENTER M K ET AL: "PROPERTIES OF FOUR HUMAN EMBRYONIC STEM CELL LINES MAINTAINED I N A FEEDER-FREE CULTURE SYSTEM" DEVELOPMENTAL DYNAMICS, WILEY-LISS , INC., NEW YORK, NY, US, vol . 229, no. 2, 18 December 2003 (2003-12-18) , pages 243-258, XP008030753 ISSN: 1058-8388 abstract	1,3,5-8, 10, 12-18, 21-27, 32-35, 41-45
A	DATABASE EMBL Onl i ne! 6 August 2003 (2003-08-06) , "17000418252568 GRN_ES Homo sapiens cDNA 5', mRNA sequence. " XP002350678 retrieved from EBI accession no. EM_EST:CF227150 Database accessi on no. CF227150 the whole document	1,5-8, 12-18, 22-27, 41-45
A	DATABASE EMBL Onl ine! 6 August 2003 (2003-08-06) , "17000531861518 GRN_ES Homo sapiens cDNA 5', mRNA sequence ." XP002350679 retrieved from EBI accessi on no. EM_EST:CF227162 Database accession no. CF227162 the whole document	1,5-8, 12-18, 22-27, 41-45

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
A	EIGES RACHEL ET AL: "A molecular view on piuripotent stem cells" FEBS LETTERS, vol . 529, no. 1, 2 October 2002 (2002-10-02), pages 135-141, XP002350246 ISSN: 0014-5793 the whole document	
A	EIGES RACHEL ET AL: "Establishment of human embryonic stem cell-transfected clones carrying a marker for undifferentiated cells" CURRENT BIOLOGY, vol. 11, no. 7, 3 April 2001 (2001-04-03), pages 514-518, XP002350247 ISSN: 0960-9822 the whole document	
P,X	WO 2004/080146 A (GERON CORPORATION; STANTON, LAWRENCE, W; BRANDENBERGER, RALPH; BRUNETT) 23 September 2004 (2004-09-23) the whole document	1,3,5-8, 10, 12-18, 21-27, 32-35, 41-45
T	DVASH TAMAR ET AL: "Temporal gene expression during differentiation of human embryonic stem cells and embryoid bodies" HUMAN REPRODUCTION (OXFORD), vol. 19, no. 12, December 2004 (2004-12), pages 2875-2883, XP002350248 ISSN: 0268-1161 the whole document	
T	BRANDENBERGER R ET AL: "Transcriptome characterization elucidates signaling networks that control human ES cell growth and differentiation" NATURE BIOTECHNOLOGY 2004 UNITED STATES, vol. 22, no. 6, 2004, pages 707-716, XP002350249 ISSN: 1087-0156 the whole document	

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I	al application No
	PCT/US2 005/002 797

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of

a type of material

[X] a sequence listing

[ ] table(s) related to the sequence listing

b format of material

[X] in written format

[X] in computer readable form

c time of filing/furnishing

[X] contained in the international application as filed

[ ] filed together with the international application in computer readable form

[X] furnished subsequently to this Authority for the purpose of search

2. [X] In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished

3 Additional comments

INTERNATIONAL SEARCH REPORT

International application No.
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Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1 ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos..

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1,3,8,10, 18,21,24-27 ,32-35 fully; 5-7, 12-17,22,23,41-45 partially

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

Invention 1: claims 1, 3, 8, 10, 18, 21, 24-27, 32-35 full; claims 5 to 7, 12-17, 22, 23, 41-45, partially.

Probe/primer/nucleic acid molecule (and the use thereof) for identifying an ES cell, which comprise a nucleic acid sequence that hybridizes to a nucleic acid represented in SEQ ID NO: 3. Use of the primer set with SEQ ID NOS: 13 and 14 for the identification of ES cells. Methods for identifying ES cells using probe/primer directed to SEQ ID NO: 3. An expression vector comprising the nucleic acid that hybridizes to SEQ ID NO: 3, a host transfected with said expression vector, a method for producing a recombinant polypeptide comprising culturing said host cells, a method for promoting an ES cell phenotype comprising administering said polypeptide, methods for promoting/inhibiting an ES cell phenotype comprising administering an agent that affects the expression of the nucleic acid that hybridizes to SEQ ID NO: 3. Antibody immunoreactive with marker encoded by a portion of a nucleic acid sequence represented in SEQ ID NO: 3.

1.1. claims: 3,10,32-35 full; 5-7, 14-17, 41 and 45 partially.

Probe/primer/nucleic acid molecule (and the use thereof) for identifying an ES cell, which comprise a nucleic acid sequence that hybridizes to a nucleic acid represented in SEQ ID NO: 7. Methods for identifying ES cells using probe/primer directed to SEQ ID NO: 7. An expression vector comprising the nucleic acid that hybridizes to SEQ ID NO: 7, a host transfected with said expression vector, a method for producing a recombinant polypeptide comprising culturing said host cells, a method for promoting an ES cell phenotype comprising administering said polypeptide, methods for promoting/inhibiting an ES cell phenotype comprising administering an agent that affects the expression of the nucleic acid that hybridizes to SEQ ID NO: 7. Antibody immunoreactive with marker encoded by a portion of a nucleic acid sequence represented in SEQ ID NO: 7.

1.2. claims: 21 full; 22, 23, 44 and 45 partially.

Use of the primer set with SEQ ID NOS: 11 and 12 (which amplify OCT4, namely SEQ ID NO: 1) for the identification of ES cells. Antibody immunoreactive with marker encoded by a portion of a nucleic acid sequence represented in SEQ ID NO: 1.

Invention 2: claims 2, 9, 19, 28-31, full; claims 5 to 7, 12-17, 22, 23, 41-45, partially

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Probe/primer/nucleic acid molecule (and the use thereof) for identifying an ES cell, which comprise a nucleic acid sequence that hybridizes to a nucleic acid represented in SEQ ID NO: 5. Use of the primer set with SEQ ID NOS: 15 and 16 for the identification of ES cells. Methods for identifying ES cells using probe/primer directed to SEQ ID NO: 5. An expression vector comprising the nucleic acid that hybridizes to SEQ ID NO: 5, a host transfected with said expression vector, a method for producing a recombinant polypeptide comprising culturing said host cells, a method for promoting an ES cell phenotype comprising administering said polypeptide, methods for promoting/inhibiting an ES cell phenotype comprising administering an agent that affects the expression of the nucleic acid that hybridizes to SEQ ID NO: 5. Antibody immunoreactive with marker encoded by a portion of a nucleic acid sequence represented in SEQ ID NO: 5.

Invention 3: claims 4, 11, 20, 36-39, full; claims 5 to 7, 12-17, 22, 23, 41-45, partially

Probe/primer/nucleic acid molecule (and the use thereof) for identifying an ES cell, which comprise a nucleic acid sequence that hybridizes to a nucleic acid represented in SEQ ID NO: 9. Use of the primer set with SEQ ID NOS: 19 and 20 for the identification of ES cells. Methods for identifying ES cells using probe/primer directed to SEQ ID NO: 9. An expression vector comprising the nucleic acid that hybridizes to SEQ ID NO: 9, a host transfected with said expression vector, a method for producing a recombinant polypeptide comprising culturing said host cells, a method for promoting an ES cell phenotype comprising administering said polypeptide, methods for promoting/inhibiting an ES cell phenotype comprising administering an agent that affects the expression of the nucleic acid that hybridizes to SEQ ID NO: 9. Antibody immunoreactive with marker encoded by a portion of a nucleic acid sequence represented in SEQ ID NO: 9.

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>nal Application No
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
wo 2004080146 A	23-09-2004	US 2004180347 AI	16-09-2004